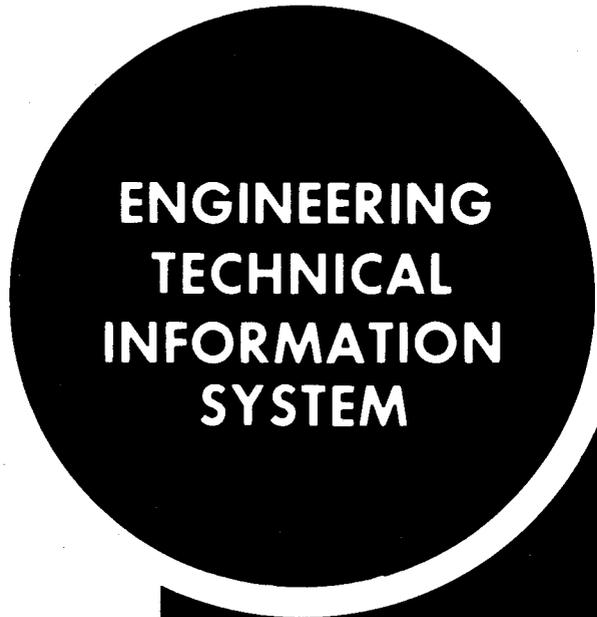


~~Pickett - Library~~

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Retain in Cabinet by Phipps
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ALL - See p. 16



FIELD NOTES • TECHNICAL REPORTS • TEXTS
DATA RETRIEVAL • CURRENT AWARENESS

VOLUME 7 NUMBER 5

Field Notes

Signs, Standards, Fabrication, and Design

Computer Processing of Contract Pay Estimates

Washington Office Engineering News



FOREST SERVICE

U.S. DEPARTMENT OF AGRICULTURE

MAY 1975



ENGINEERING FIELD NOTES

This publication is a monthly newsletter published to exchange engineering information and ideas of a technical or administrative nature among Forest Service personnel.

The text in the publication represents the personal opinions of the respective author and must not be construed as recommended or approved procedures, mandatory instructions, or policy, except by FSM references. Because of the type of material in the publication, all engineers and engineering technicians should read each issue; however, this publication is not intended exclusively for engineers.

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ENGINEERING FIELD NOTES

Invitation to Readers: Every reader is a potential author of an article for FIELD NOTES. If you have a news item or short article you would like to share with Service engineers, we invite you to submit it to FIELD NOTES for publication.

Material submitted to the Washington Office for publication should be reviewed by the respective Regional Office to see that the information is current, timely, technically accurate, informative, and of interest to engineers Service-wide (FSM 7113). The length of material submitted may vary from several short sentences to several typewritten pages; however, short articles or news items are preferred. All material submitted to the Washington Office should be typed double-spaced, and all illustrations should be original drawings or glossy black and white photos. The Washington Office will edit for grammar only.

Each Region has an Information Coordinator to whom field personnel should submit both questions and material for publication. The Coordinators are:

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R-2 Allen Groven	R-6 Kjell Bakke	R-10 Bill Vischer
R-3 Bill Strohschein	R-8 Ernest Quinn	WO Al Colley
R-4 Fleet Stanton		

Coordinators should direct questions concerning format, editing, publishing dates, and other problems to Gordon L. Rome, or Rita E. Wright, Editorial Services, Engineering Staff Unit, Forest Service, USDA, Washington, D.C. 20250; (703) 235-8198.

This publication is distributed from the Washington Office directly to all Regional, Station, and Area Headquarters. If you are not now receiving a copy and would like one, ask your Office Manager or the Regional Information Coordinator to increase the number of copies sent to your office; use Form 7100-60 for this purpose. Copies of back issues are also available from the Washington Office, and can be ordered on Form 7100-60.

SIGNS: STANDARDS, FABRICATION, AND DESIGN

Roland W. Rhoads
Landscape Architect
Washington Office—Engineering

INTRODUCTION

Signing means different things to different people; it depends on the person to whom you are speaking. To a Visitor's Information Specialist, the subject of *signing* may mean an interpretive sign; but to a traffic engineer, *signing* may mean a highly complex system of signs conveying messages relative to road conditions, information and traffic regulation, and continuing programs of operation and maintenance.

Generally, about 90 percent of the signs used in the Forest Service are for traffic control purposes. However, many signs and posters are also used to communicate messages relative to other concerns such as fire prevention, the regulation of certain activities, and land surveys.

Signs are an essential medium of communication with the public user. Some signs are required by law for safety reasons, such as the traffic control type signs; others are required simply because there is some predetermined action or response we want from the forest user. Any sign regardless of its function is our front-line communication with the public. If we are doing a poor job, it will reflect in our management credibility and, even worse, may result in placing someone's health and well-being in jeopardy.

There are numerous regulations, policy standards, and guides relative to the proper usage of signs. It is sometimes difficult to know when a standard sign must be used and when there is the latitude for the development of a special sign.

The meeting of sign needs is made even more complex with the limitations on procurement sources, along with the desire to be assured that we are getting the most durable and most maintenance-free sign-material systems available. The remaining portion of this article deals with some of these problems, and, hopefully, will provide a better understanding of the situation which will aid signing efforts.

There is no doubt of the importance of signing in the administration of the National Forest System. The Chief's FY 1975 Program of Work and Planning Advice has stressed compliance with the Highway Safety Program Standard #13. Signs and posters for purposes other than traffic control naturally must be included as an integral part of a particular program need.

TRAFFIC CONTROL SIGNS

Fund reductions and other constraints have hindered the full implementation of traffic control signs to comply with Federal Highway Administration (FHWA) standards. There was one exception. During the last fiscal year, the Chief's advice was that warning and regulatory signs needed for public safety would be installed or replaced as needed. However, the conversion of existing signs and markings to conform to the 1971 edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) must receive greater emphasis. Compliance dates may not be met on all National Forests, but the Chief's current advice on meeting the requirements of Standard #13 places new stress on this conversion. Guides and standards for traffic control signs are found in the 1971 edition of MUTCD. There are certain variations from the standards shown in the MUTCD which are applicable to Forest Service roads. These variations, found in chapter 20 of the *Sign Handbook* (FSH 7109.11), have been reviewed and essentially approved by the FHWA. The MUTCD contains information relative to the size, color, shape, mounting heights, and placement for all signs and markings used along roads open to public travel. As a brief review, traffic control signs can be summarized as follows:

- Regulatory Signs: . . . "inform highway users of traffic laws or regulations and indicate the applicability of legal requirements that would not otherwise be apparent." *Stop*, *Yield*, and *Speed Limits*, are examples of signs included in this category.
- Warning Signs: . . . "are used when it is deemed necessary to warn of existing or potentially hazardous conditions in or adjacent to a highway or street." A few examples include the curve symbols, *Stop Ahead*, and *One Lane Bridge*.
- Guide Signs: . . . "are essential to guide the motorist along streets and highways; to inform him of intersecting routes; to direct him to cities, towns, villages, or other important destinations; to identify nearby rivers and streams, parks, forests and historical sites; and, generally, to give him such information as will help him along his way in the most simple, direct manner." Illustrations of this category include:
 - Route markers such as the distinctive National Forest Route Marker
 - Destination, directional, and mileage signs
 - General information signs, including Forest Service family-of-shapes signs used to identify Forest boundaries and entrances to campgrounds

A clarification of the standards in sections 2D-44 and 2D-50 of the *Manual on Uniform Traffic Control Devices* regarding the color and shape of signs along Forest Service roads was given by the FHWA in the Official Rulings on Requests, Volume IV, October 1973. This clarification permits the Forest Service to use our distinctive identification signs.

Congress made clear in the Highway Safety Act of 1966 that, when appropriate, the highway safety standards are to be applicable to all roads open to public travel. State governors are made responsible for highway safety on all

roads administered by the State highway departments and on roads and street systems in local jurisdictions. Federal agencies are responsible for implementing Standard #13 in those federally administered areas where they control the highways or supervise traffic operations. They have added responsibility to coordinate their traffic control measures with those of the State program.¹

The Forest Service is now developing a Memorandum of Understanding with the Federal Highway Administration to establish the applicability of those standards of the Highway Safety Act under the FHWA direction. Standard #13, which covers signing, has added one item to the standard for use in the Forest Service: a close working relationship has been established with State, county, and community traffic-engineering offices involved within or bordering the National Forests. Basically, Forest Service roads are extensions of State and county systems; our signing practices should be consistent with those of the adjacent road-managing jurisdictions. We cannot afford to expose the traveling public to a different signing standard when it leaves the road system of one jurisdiction and enters that of the Forest Service.

Standard #13, "Traffic Engineering Service," contains some very specific procedures for analyses, program planning, development, operation, and maintenance of traffic control signing, all of which apply to the Forest Service transportation system.

One particular area of responsibility where the Forest Service falls short of the Standard #13 requirements is in the inventory and planning analysis of traffic control sign needs. Currently, the Washington Office is considering a policy recommendation which would require the collection of necessary traffic control signing data, complete traffic-engineering analysis, and a program proposal. Initially, this would be required in all level "5" roads as described in the proposed *Maintenance Management Handbook 7109.15*.

Another important factor to be considered is how the transportation system is managed. A system that is managed to keep all roads open to public travel will naturally have to be signed differently than one that discourages traffic or closes many roads to the public. The transportation system of operation must be resolved before any kind of a meaningful signing program can be established.

DESIGN

As noted earlier, signs are used for a variety of purposes in the Forest Service. They welcome, plead, command, guide, warn, identify, and inform. Whether regulating traffic, identifying places or features, calling attention to a bump in the road or a garbage pit in a campground, signs are the numerous silent voices that bring some order and safety to our Forest areas and roads.

First-rate signs are designed to display information effectively. Often they are designed by people who are unaware that there are national standards of uniformity or that the standards are set by other jurisdictions. Design standards for traffic control signs are established

¹ *Highway Safety Program Manual No. 13 Traffic Engineering Services.*

by the Federal Highway Administration (FHWA). However, the FHWA is open to suggested improvement on traffic control signs. Traffic control sign-improvement proposals must be channeled through the Washington Office and then forwarded to the FHWA. Generally, the FHWA forwards the proposals to the National Advisory on Signs and Markings Committee for review and recommended action. The standard family-of-shape signs also offer little or no opportunity for design variation.

Why is uniformity so important for these signs? For traffic control signs, it is primarily for safety reasons – simply to insure instant recognition and reaction. The need for uniformity of our Forest Service entrance and identification signs is to provide a consistent message, readily understood and associated with the Forest Service, and similar in principle to any number of commercial enterprises' signs, such as the Shell Oil Co., American Airlines, and Coca-Cola.

Interpretive signs are really the only area where a designer has any real flexibility and freedom to exercise design creativity. These signs are generally one-of-a-kind for a unique situation. However, even here, the designer must keep in mind that the basic function of a sign is to display information effectively. Signs that use over-designed mounts, gaudy or overly subtle colors, or complex messages only call attention to themselves. No matter how handsome, arty, or distinctive the design, it is of no value unless it communicates the desired message which can be readily understood without a major educational effort.

SIGN PROCUREMENT

The Forest Service has gradually moved out of the in-house manufacturing of signs. There is only one remaining sign shop still being operated in the Forest Service. The shift has been to the use of the Federal Prison Industries, Inc. (FPI) and sometimes commercial sources. However, the commercial sources are not readily accessible because of the requirement to use FPI.

Regardless of where our signs are made, we need to be assured that the quality of materials are the best available. Considerable testing has been conducted through the Missoula Equipment Development Center (MEDC) over the past three to four years in an effort to develop the best sign-material system Service-wide. Materials for traffic control signs and wood-routed signs have been exposed to weathering conditions on test fences across the country. MEDC has published information on these materials from time to time in *Equip Tips*. This information is now being pulled together into a Service-wide uniform-sign specification. It will replace the rather loose and outdated specifications found in the *Sign Handbook*.

There have been some complaints about the quality control and delivery of signs manufactured by FPI. It is hoped that with the development of uniform-sign specifications a quality standard will be established. Through a follow-up inspection policy and an improved expediting or shipping program, perhaps the sign manufacturing service from FPI will be upgraded.

CONCLUSION

Signs are provided to serve people and are a vital form of communication. They can be attractive and complement the beauty of our natural environment. Some signs must be consistent in design and application; others can exhibit considerable design innovation. Some must contrast, while others may be more subtle and blend in with the surroundings. Sign materials and fabrication procedures are becoming increasingly sophisticated and complex. Signs must be durable and as maintenance-free as possible. Research and development will continue to improve sign materials.

No longer can signs be designed or manufactured without the coordination of several others (designers, MEDC, MUTCD) contributing their own area of expertise. Sometimes the responsibility of designing a sign is assigned to a person who may not have the knowledge to do the job adequately. For example, any proposals to modify traffic control signs must be screened by the FHWA to determine national applicability. Therefore, any proposals for design variations or other modifications must be preceded by determining who has the authority for that particular sign, what standards already exist, and who has a thorough knowledge of how it is to be used.

Summarily, if the public user has sufficient directions to guide him, arrives at his destination safely, and the information needed to enjoy and to understand the Forest Service better, the effectiveness test of our signing job has been met.

COMPUTER PROCESSING OF CONTRACT PAY ESTIMATES

John Best
Supervisory Civil Engineer
Region 5

INTRODUCTION

On the Six Rivers National Forest, a more efficient method of processing Public Works Contract pay estimates was needed. With large contracts consisting of a great number of bid items, the documents were time-consuming to prepare and often contained mathematical errors. By the time auditing processes and corrections were completed, the contractor's check was often late.

To handle these reports more efficiently, a computer program was developed to process them. Our first programs were in Basic Language and the latest version is the Fortran V. The programs, which are run at Fort Collins on the UNIVAC 1108, have been in use now for three construction seasons. Their advantages are the speed and accuracy of mathematical calculations and the subsequent savings in auditing time. Other savings are not

significant because they depend on how the Forest handles the preparation of the Pay Estimate forms.

PROCEDURE

After a contract is awarded, computer input forms (fig. 1) are filled out. The parts that change monthly are left blank and copies of the forms are made for field use.

Figure 2 shows a properly completed form as it comes from the field. This copy is signed by both the contractor and C.O.R.; no further signatures are required other than the contracting officer's. These forms are attached to the computer printout for payment.

The computer output is shown in Figure 3. Signature blocks on the printout are used when processing the final pay estimate. We are required to obtain signatures on the printout in this case. Figure 4 is a copy of the latest version of the Fortran program being used.

We have also developed computer programs to process Cost-to-Government Reports (R5-6300-10) and Purchaser Credit Reports (2400-21). Forests interested in copies of these programs, or more information on these or the Pay Estimate Program, should contact:

Harry Richter
Six Rivers National Forest
710 E Street
Eureka, California 95501

**ESTR
Pay Estimate**

Card One

Estimate Number	_____	(1-10)
Original Contract Amount	<u>631873.38</u>	(11-20)
Increase/Decrease	_____	(21-30)
Previous Payments	_____	(31-40)
* Retention	_____	(41-50)
Contract Days Allowed	<u>180</u>	(51-60)
Cutoff Date	_____	(61-70)
Days Used	_____	(71-80)

I certify that the quantities listed are correct and payment has not been made.

Contractor

Below items received, payment recommended by

C.O.R.

* For 10% enter 10
For full payment enter zero
For lump sum enter amount

Card Two

Project ID and Contract Number (1-80)

G-0 ROAD, SALAL SPR. SECTION, CONT. NO. 39-45

Card Three

Contractor's Name (1-80)

CROMAN CORP.

Card Four and Five

Remarks (1-80/1-80)

Figure 1. – Computer Input Forms

ESTR
Pay Estimate

Card One

Estimate Number	<u>2</u>	(1-10)
Original Contract Amount	<u>631873.38</u>	(11-20)
Increase/Decrease	<u>+10000.00</u>	(21-30)
Previous Payments	<u>39583.43</u>	(31-40)
*Retention	<u>10</u>	(41-50)
Contract Days Allowed	<u>180</u>	(51-60)
Cutoff Date	<u>6/20/73</u>	(61-70)
Days Used	<u>60</u>	(71-80)

* For 10% enter 10
For full payment enter zero
For lump sum enter amount

I certify that the quantities listed
are correct and payment has not
been made.

John Doe
Contractor

Below items received, payment
recommended by

Joe Doe
C.O.R.

Card Two

Project ID and Contract Number (1-80)

G-0 ROAD, SALAL SPR. SECTION, CONT. NO. 39-4588

Card Three

Contractor's Name (1-80)

CROMAN CORP.

Card Four and Five

Remarks (1-80/1-80)

PAYMENT FOR MATERIALS MADE AS PER GENERAL PROVISIONS, PARAGRAPH 7(b)

Figure 2.— Completed Form

Item (1-20)	Unit (21-30)	Price (31-40)	Quantity (41-50)
.1.5.0.(.1.)A.G.G..B.A.S.E.C.L.A.S.S.B.	C.Y.	3.50	5000
.1.5.2.(.1.)W.A.T.E.R.I.N.G.	M-GAL.	5.00	2000
.2.0.9.(.1.)B.I.T..C.T.D..C.M.P. . . .	0	0	0
. . . (.A.) .1.8." ,.1.6.G.A.	L.F.	6.83	300
.C.H.A.N.G.E. .O.R.D.E.R. .N.O...1. . . .	0	0	0
.2.0.9.(.1.)B.I.T..C.T.D...C.M.P. . . .	0	0	0
. . (.B.) .2.4." ,.1.4.G.A...	L.F.	9.70	500
. . (.C.) .3.6." ,.1.2.G.A...	L.F.	17.00	1567
.P.A.Y.M.E.N.T. .F.O.R. .M.A.T.E.R.I.A.L.	0	0	0
.S. .O.N. .H.A.N.D.	L.F.	5000.00	1

Figure 2 – Completed Form (Continued)

10

CONTRACT PAYMENT ESTIMATE AND INVOICE
SIX RIVERS NATIONAL FOREST

G-O ROAD, SALAL SPR, SECTION, CONT, NO, 39-4588

CROMAN CORP.

ORIGINAL CONTRACT AMOUNT \$ 631873,38
INCREASE OR DECREASE \$ 10000,00
NET CONTRACT AMOUNT \$ 641873,38

ESTIMATE NO. 2
CUT OFF DATE 06/20/73

```

*****
* I CERTIFY THAT THE AMOUNT          ***
* LISTED IS CORRECT AND              ***
* PAYMENT HAS NOT BEEN               *** TOTAL EARNED          $ 66038,00
* RECEIVED.                          ***
* BY .....                          ***
* ABOVE ITEMS RECEIVED PAY=          *** PREVIOUS PAYMENT     $ 39583,43
* MENT RECOMMENDED.                 ***
* BY COR.....                       ***
* PAYMENT APPROVAL                   *** RETENTION            $ 6603,80
* BY CO.....                         ***
*                                     *** DUE THIS ESTIMATE    $ 19850,77
*                                     ***
*                                     *** PERCENT TIME USED,.... 33
*                                     ***
*                                     *** PERCENT COMPLETE,.... 10
*                                     ***
*****

```

REMARKS : PAYMENT FOR MATERIALS MADE AS PER GENERAL PROVISIONS, PARAGRAPH 7(6)

NOTE 1 - THE AMOUNT RETAINED IS IN ACCORDANCE WITH ART, 7, PARA, C, SF23A OF THE GENERAL PROVISIONS

CONTRACT PAYMENT ESTIMATE AND INVOICE
SIX RIVERS NATIONAL FOREST

ITEM	UNIT	PRICE	QUANTITY	AMOUNT
150(1)AGG.BASECLASSB C, Y.		3,50	5000,00	17500,00
152(1)WATERING	M-GAL.	5,00	2000,00	10000,00
209(1)BIT.CTD.CMP	0	,00	,00	,00
(A)18",16GA.	L. F.	6,83	300,00	2049,00
		,00	,00	,00
CHANGE ORDER NO 1	0	,00	,00	,00
209(1)BIT.CTD.CMP	0	,00	,00	,00
(B)24",14GA	L. F.	9,70	500,00	4850,00
(C)36",12GA.	L. F.	17,00	1567,00	26639,00
		,00	,00	,00
PAYMENT FOR MATERIAL	0	,00	,00	,00
\$ ON HAND	L.S.	5000,00	1,00	5000,00

Figure 3. - Computer Output

00100	1*	C		000000
00100	2*	C	PAYMENT ESTIMATE PROGRAM	000000
00100	3*	C		000000
00100	4*	C		000000
00100	5*	C	SYSTEM UNIVAC 1108	000000
00100	6*	C		000000
00101	7*		DIMENSION EST(2),COD(2),PROJ(16),CON(16),ITEM(4),REMARK(32)	000000
00103	8*		DIMENSION IUNIT(2)	000001
00104	9*		REAL OCA, ID, PP	000001
00104	10*	C		000001
00104	11*	C	READ DATA	000001
00104	12*	C		000001
00105	13*		READ 10, EST, OCA, ID, PP, RET, COA, COD, DU	000001
00117	14*	10	FORMAT(2A5, 5F10, 0, 2A5, F10, 0)	000023
00120	15*		READ 11, PROJ, CON	000023
00124	16*	11	FORMAT(16A5/16A5)	000035
00125	17*		CALL EJECT	000035
00126	18*		READ 12, REMARK	000037
00131	19*	12	FORMAT(16A5/16A5)	000046
00132	20*		TOTAL=0	000046
00133	21*	3	READ 1, ITEM, IUNIT, PRICE, QUAN	000050
00141	22*	1	FORMAT(6A5, 2F10, 0)	000064
00141	23*	C		000064
00141	24*	C	END OF JOB TEST	000064
00141	25*	C		000064
00142	26*		IF (ITEM(1), EQ, 4) HEDF1) GOTO 44	000064
00142	27*	C		000064
00142	28*	C	MATH CALCULATIONS	000064
00142	29*	C		000064
00144	30*	33	AMOUNT=PRICE*QUAN	000070
00145	*DIAGNOSTIC*		THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL,	
00145	31*		IF (AMOUNT, EQ, 0.) AMOUNT=0,	000073
00147	32*		LINE=LINE+1	000076
00150	33*		IF (LINE, GT, 45) GOTO 45	000101
00152	34*		GO TO 46	000105
00153	35*	45	CALL EJECT	000107
00154	36*		LINE =0	000110
00154	37*	C		000110
00154	38*	C	PRINT ITEM	000110
00154	39*	C		000110
00155	40*	46	PRINT 2, ITEM, IUNIT, PRICE, QUAN, AMOUNT	000112
00164	41*		TOTAL=TOTAL+AMOUNT	000127
00165	42*		GOTO 5	000137
00166	43*	44	X=ID+OCA	000134
00167	44*		IR=(DU/COA*100)+0.5	000136
00170	45*		H=(TOTAL/X*100)+0.5	000151
00171	46*		IF (RET=10, 0) 5, 6, 7	000164
00174	47*	5	D=TOTAL=PP	000170
00175	48*		GOTO 8	000173
00176	49*	6	RET=TOTAL*.10	000175
00177	50*	7	D=TOTAL=PP-RET	000200
00177	51*	C		000200

Figure 4.— Latest Version of the Fortran

00177	52*	C	PRINT COVER PAGE	000200
00177	53*	C		000200
00200	54*		8 IPAGE=1	000204
00201	55*		PRINT 55,IPAGE,PROJ,CON	000205
00206	56*		PRINT 66,OCA,ID,X,EST,COD	000220
00215	57*		PRINT 77,TOTAL,PP,RET,D,IR,H	000235
00225	58*		PRINT 88,REMARK	000247
00230	59*		2 FORMAT(1X,4A5,1X,2A5,3(5X,F10,2))	000260
00231	60*		55 FORMAT(1X,76(=1))//8X'CONTRACT PAYMENT ESTIMATE AND INVOICE',/	000260
00231	61*		114X'SIX RIVERS NATIONAL FOREST',63X'PAGE NO. ',11//5X,16A5,//1X,1	000260
00231	62*		20X,16A5//	000260
00232	63*		66 FORMAT(21X'ORIGINAL CONTRACT AMOUNT \$',F10,2/25X'INCREASE OR DECRE	000260
00232	64*		1ASE \$',F10,2/26X'NET CONTRACT AMOUNT \$',F10,2//31X'ESTIMATE NO. ',	000260
00232	65*		22A5/27X' CUT OFF DATE ',2A5//)	000260
00233	66*		77 FORMAT(1X,72(=1))//1X'I CERTIFY THAT THE AMOUNT',6X'***',35X'	000260
00233	67*		1'/1X'*,1X'LISTED IS CORRECT AND',10X'***',35X'*/1X'*,1X'PAYMEN	000260
00233	68*		2T HAS NOT BEEN',11X'***',1X'TOTAL EARNED',7X'*,F10,2,4X'*/1X'*,	000260
00233	69*		31X'RECEIVED',22X'***',20X,11(=1),4X'*/1X'*,1X'BY',26(=1),3X'***	000260
00233	70*		4',35X'*/1X'*,32X'***',35X'*/1X'*,1X'ABOVE ITEMS RECEIVED PAY=	000260
00233	71*		5,6X'***',1X'PREVIOUS PAYMENT',2X'*,F10,2,4X'*/1X'*,1X'MENT RECO	000260
00233	72*		6MENDED,',14X'***',20X,11(=1),4X'*/	000260
00233	73*		7	000260
00233	74*		1X'*,1X'BY CDR	000260
00233	75*		8',22(=1),3X'***',35X'*/1X'*,32X'***',1X'RETENTION',10X'*,F10,2	000260
00233	76*		9,4X'*/1X'*,1X'PAYMENT APPROVAL',15X'***',20X,11(=1),4X'*/1X'*,	000260
00233	77*		*1X'BY CO.',22(=1),3X'***',1X'DUE THIS ESTIMATE',2X'*,F10,2,4X'*/	000260
00233	78*		*/1X'*,32X'***',20X,11(=1),4X'*/1X'*,32X'***',1X'PERCENT TIME US	000260
00233	79*		*ED,.....',13,9X'*/1X'*,32X'***',35X'*/1X'*,32X'***',1X'PERCENT	000260
00233	79*		*COMPLETE,.....',13,9X'*/1X'*,32X'***',35X'*/1X,72(=1),8(//)	000260
00234	80*		88 FORMAT(1X'REMARKS : ',16A5/11X,16A5//	000260
00234	81*		11X'NOTE 1 = THE AMOUNT RETAINED IS IN ACCORDANCE'/	000260
00234	82*		21X' WITH ART. 7, PARA. C, SP23A OF THE GENERAL PROVISIONS'/	000260
00234	83*		41X,76(=1)/1H1)	000260
00235	84*		END	000260
END OF COMPILATION: 1 DIAGNOSTICS,				
00101	1*		SUBROUTINE EJECT	000000
00101	2*	C		000000
00101	3*	C	SUBROUTINE EJECT PRINTS PAGE HEADINGS	000000
00101	4*	C		000000
00103	5*		COMMON/PAGES/LINE,IPAGE	000000
00104	6*		DATA_IPAGE/1/	000000
00106	7*		LINE=1	000000
00107	8*		IPAGE=IPAGE+1	000001
00110	9*		PRINT 1,IPAGE	000003
00113	10*		1 FORMAT(1H1,1X,76(=1))//8X'CONTRACT PAYMENT ESTIMATE AND INVOICE',/	000010
00113	11*		114X'SIX RIVERS NATIONAL FOREST',/	000010
00113	12*		263X'PAGE_NO. ',11//	000010
00113	13*		31X,76(=1)/	000010
00113	14*		41X'ITEM',17X'UNIT',16X'PRICE',7X'QUANTITY',9X'AMOUNT',/	000010
00113	15*		51X,4(=1),17X,4(=1),16X,5(=1),7X,8(=1),9X,6(=1)/	000010
00114	16*		RETURN	000010
00115	17*		END	000021

Figure 4.— Latest Version of the Fortran (Continued)

WASHINGTON OFFICE ENGINEERING NEWS

CONSULTATION AND STANDARDS

Charles R. Weller
Assistant Director

CURRENT EMPHASIS ON TRAILS

With the passage of the National Trails System Act on October 2, 1968, the Forest Service became an active participant, along with several other Federal agencies, States, local governments, and private organizations in developing a nationwide system of trails.

The Act designated the Appalachian Trail, primarily a footpath of approximately 2,050 miles extending generally along the Appalachian Mountains from Mount Katahdin, Maine to Springer Mountain, Georgia as a National Scenic Trail. The Act also assigned the overall responsibility for administration of the Trail to the Secretary of the Interior who, in turn, directed the National Park Service to carry out his assigned responsibilities. Under the terms of memorandums of agreement between the Departments of Agriculture and Interior and the Forest Service and National Park Service (FSM 7730.42), the Forest Service accepted the responsibility for the Appalachian National Scenic Trail located inside the boundaries of the National Forests. This responsibility covers approximately 828 miles of trail located across the White Mountain, Green Mountain, George Washington, Jefferson, Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests. Our minimal current objective is to have the trail tread constructed on its final location and all rights-of-way acquired by the end of fiscal year 1977. Trail heads and other necessary facility developments are currently being planned and constructed; we will continue this effort on a priority basis along with other forest development trail needs.

The Pacific Crest Trail was also designated by the Act as a National Scenic Trail, primarily as a trail for hikers and equestrians. It is approximately 2,600 miles extending from the Mexican-California border northward generally along the mountain ranges of the west coast States to the Canadian-Washington border. The overall responsibility for administration of the Trail was assigned by the Act to the Secretary of Agriculture who, in turn, directed the Forest Service to carry out this assignment.

We have memorandums of agreement with both the National Park Service and the Bureau of Land Management (FSM 7730.42) which establish the responsibilities of the various Federal agencies. There are approximately 2,000 miles of trail located inside the boundaries of the National Forests. These include the Cleveland, San Bernadino, Angeles, Sequoia, Sierra, Inyo, Stanislaus, Toiyabe, Eldorado, Tahoe, Plumas, Lassen, Shasta-Trinity, Klamath, Rogue River, Winema, Umpqua, Deschutes, Willamette, Mt. Hood, Gifford-Pinchot, Snoqualmie, Mount Baker, Wenatchee, and Okanogan National Forests. Our minimal current objective is to have the trail tread constructed on its final location and all rights-of-way acquired within

the boundaries of the National Forests by the end of fiscal year 1979. Currently being planned and constructed, these trail heads and other necessary facility developments will be continued on a priority basis along with other Forest trail programming needs. The Forest Service has the ultimate responsibility for all trail segments located outside the boundaries of federally administered areas. We hope that the States will assume the responsibility for these segments as intended by the legislation. If this does not occur, the Forest Service will have to do the job.

The National Trails System Act also provided for National Recreation Trails and connecting and side trails. We see our development trails system as a major part of the total miles of these types of trails.

National Recreation Trails are to provide outdoor recreational opportunities for the greatest number of people. In order to do this, they should generally be located near urban areas; however, heavily used trails within the National Forests may also qualify regardless of whether they meet the two-hour travel time shown in the "Criteria for National Recreation Trails" (FSM 7731.31). The most important feature concerning National Recreation Trails is that they must be ready for use prior to being designated. We want to be sure that the trail has been constructed to accommodate the intended use for the 10-year-guaranteed-use life of the trail. This includes tread, trail head and other facilities which are needed for the convenience of the user. We certainly do not want to designate and then advertise for use such trails which would generate adverse reaction from users due to an inadequate tread or facilities.

By selecting a few trails and giving them priority on development and maintenance funds, we have an opportunity to upgrade our trail system on a cost-benefit basis. The Forest Service presently has two designated National Recreation Trails – the Gabriellino Trail on the Angeles National Forest and the Shockaloe Trail located on the Bienville National Forest. Two additional candidates are presently under construction – the Craig Crest Trail on the Grand Mesa National Forest and the Johnson Pass Trail on the Chugach National Forest. There are several other candidates in the planning stages and we hope to see more as a result of the planning direction contained in Housley's 7730 letter of September 4, 1974.

Connecting and side trails, provided for in the Act, are part of the rest of our forest development trails. Housley's letter provides direction for assessing existing trails and making a determination of future needs. We hope the Forest Service will be able to program funds for the upgrading of these greatly needed recreational facilities.

Trails within the National Forests have generally been neglected during the past decade. With the added emphasis placed on our system by Congress during hearings on our fiscal year 1974 budget, and the continued emphasis now being given by the Chief, we hope to be able to turn this around. Construction and maintenance of an adequate system of trails within the National Forest are needed to meet the ever increasing demand for facilities to accommodate those who like to walk, hike, ride horseback, bicycle or use other trail vehicles. At the same time we meet this need, we will find that the Forest Service has also met the requirements of the National Trails System Act.

TECHNOLOGICAL IMPROVEMENTS

Heyward T. Taylor
Assistant Director

CATALYTIC CONVERTERS

During the last few weeks there has been a rapidly growing interest in catalytic converters. Of course, the question being asked is, "What is the fire starting potential of these devices?" We want to bring everyone up to date on where we are and what we are going to do to answer some of the questions.

There has been a number of articles in national magazines and several newspapers throughout the country regarding catalytic converters. There was also a release on a national television news program. Unfortunately, some of these suffered from misinformation or were glamorized for public appeal. This has added to the confusion, and compounded the number of questions received both in the Washington Office and at the San Dimas Equipment Development Center. We want to emphasize that we have neither seen nor heard of any documented evidence that fires have been started by heat from a catalytic converter. There has only been hearsay, and suspected, or unconfirmed reports.

There are no hard facts available on which to draw any firm conclusions. There is a concern that there could be a problem because of the operating temperatures within the converters. Therefore, there is a short-term project being initiated at San Dimas to test several models of converter-equipped vehicles to determine some of the exhaust system temperatures under varying conditions. This testing will be similar to that reported in ED&T Report 5100-15 "Dangers of Ignition of Ground Cover Fuels by Vehicle Exhaust Systems," published in November 1970. Until this work is completed, hopefully by the end of June, we cannot take a strong stand one way or the other. We suggest caution in answering any questions at this point, other than providing the information that we are evaluating the systems. Also, it should be known that we are working closely with EPA on this situation.

If you have further questions, Boone Richardson at San Dimas or Don Sirois, Farnum Burbank, or Ollie Broadway in the Washington Office can be contacted.

NEW DIRECTOR AT MISSOULA EDC

On March 11, 1975, Lee Northcutt arrived in Missoula to assume his new role as Director of the Equipment Development Center there. Lee returns to NFS after having been in Forest Fire and Atmospheric Sciences Research for several years.

OPERATIONS

Harold L. Strickland
Assistant Director

NEW IMAGERY SOURCE

In the past year a new source of imagery has become available. The imagery consists of small-scale high resolution photography as taken on NASA flights in support of developmental projects throughout the United States. A large amount of this photography is acquired by using a metric camera (RC10) at a scale in the area of 1:70,000. This could be a good source of imagery and should be considered before ordering special photography.

If there is coverage for your area of interest, the mission may only be a single strip of photography between two points or may consist of a block of photos over a large area. Unfortunately, there is no single layout showing the extent of this imagery at the present time, although the U.S. Geological Survey National Cartographic Information Center is preparing this graphic and will release it as soon as it is completed. Until that time, you can determine whether there is coverage and of what type by contacting the EROS Data Center where the imager resides.

Exhibits one and two are copies of the EROS Data Center forms with instructions for requesting a geographic search and for ordering NASA aircraft photography. Inquiries of the data base may be made by mail, visit, or telephone to Sioux Falls, South Dakota. The telephone number is FTS (605) 594-6151 or commercial (605) 594-6511.

In addition, terminals directly into the EROS Data Center are in the following locations:

National Cartographic Information Center
U.S. Geological Survey
National Center #507
12201 Sunrise Valley Drive
Reston, Virginia 22092
Telephone (703) 860-6045

Mid-Continent Mapping Center
Topographic Division
U.S. Geological Survey
P.O. Box 133
Ninth and Pine Streets
Rolla, Missouri 65401
Telephone (314) 364-3680

Rocky Mountain Mapping Center
Topographic Division
U.S. Geological Survey
Building 25
Denver Federal Center
Denver, Colorado 80225
Telephone (303) 234-2326

Western Mapping Center
Topographic Division
U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Telephone (415) 323-2427

EROS Applications Assistance Facility
U.S. Geological Survey
National Space Technology Laboratory
Bay St. Louis, Mississippi 39520
Telephone (601) 688-3541 or 3472

Inquiries may be made by mail, visit, or telephone to any of these locations.

PERSONNEL NOTE

Mechanical Engineer Robert L. Hartman returned to the Forest Service on March 31, 1975 and will be working with Engineering Operations, Equipment Engineering. He served with General Services Administration for a 1-1/2-year interim period. During the previous 10 years, Hartman was assigned in Ogden, Utah and Morgantown, West Virginia.

PHONE: 605-594-6511
EXT. 151
FTS: 605-594-6151

INQUIRY FORM
GEOGRAPHIC COMPUTER SEARCH
EROS DATA CENTER
SIOUX FALLS, SD 57198



Date _____

NAME MR: _____
(LAST) (FIRST) (INITIAL) Previous Contact No. _____
(IF KNOWN)
COMPANY _____ Phone: (BUSINESS) _____
ADDRESS _____ Phone: (HOME) _____
CITY _____ STATE _____ ZIP _____ Your Reference No. _____
(P.O., GOVT. ACCT. OR OTHER)

TO INITIATE AN INQUIRY AND COMPUTER GEOSearch, COMPLETE ONE OF THE FOLLOWING

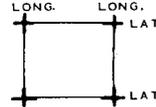
POINT SEARCH



Imagery with any coverage over the selected point will be included.

Latitude _____ ° _____ '
Longitude _____ ° _____ '

AREA RECTANGLE



Imagery with any coverage over the selected area will be included.

Longitude _____ ° _____ ' TO Longitude _____ ° _____ '
Latitude _____ ° _____ ' TO Latitude _____ ° _____ '

GEOGRAPHIC NAME AND LOCATION (INCLUDE A MAP IF POSSIBLE) _____

INDICATE YOUR INTERESTS FOR EACH OF THE FOLLOWING:

TYPE OF COVERAGE

- ERTS
- SKYLAB
- NASA-AIRCRAFT
- AERIAL MAPPING PHOTOGRAPHY

TIME OF YEAR

- JAN-MAR
- APR-JUNE
- JULY-SEPT
- OCT-DEC
- SPECIFIC DATES _____

TYPE OF PRODUCT

- BLACK & WHITE
- COLOR OR COLOR INFRARED

MAXIMUM CLOUD COVER ACCEPTABLE

- 10% 30% 50% 80% 100%

MINIMUM QUALITY RATING ACCEPTABLE

- 0-2 3-4 5-6 7-9
(VERY POOR) (POOR) (FAIR) (GOOD)

APPLICATION AND INTENDED USE _____

Exhibit 1. – EROS Data Center Form

HOW TO REQUEST A GEOGRAPHIC SEARCH

This form is used to request a computer search for imagery over a point or area of interest.

Data from this inquiry sheet will be used to initiate a computer Geosearch. The results will be returned on a computer listing along with a decoding sheet, from which imagery can be selected and ordered.

Complete the form as follows:

- A. Enter your **NAME**, **ADDRESS**, and **ZIP CODE** clearly. If you have had previous contact with the Data Center, include your most recent **CONTACT** number. Enter a **PHONE** number where you can be reached during business hours.
- B. Complete the required information for either the **POINT SEARCH**, or **AREA RECTANGLE** inquiry, which includes the geographic **LATITUDE** and **LONGITUDE** coordinates. If coordinates are not available, please supply the **GEOGRAPHIC NAME AND LOCATION** or a map with the area of interest identified. It is beneficial that you minimize your area of interest, thereby allowing for a faster and more critical retrieval of information.
- C. Complete all other information.
- D. Complete the **APPLICATION AND INTENDED USE** portion of the inquiry. i.e. will it be used for identifying buildings or will it be framed and placed on a wall etc. This information will assist our researchers in determining whether the products available will satisfy your requirements.

MAIL this FORM to:

USER SERVICES UNIT
EROS DATA CENTER
SIOUX FALLS, SD 57198

Exhibit 1. – EROS Data Center Form (Continued)

HOW TO ORDER NASA AIRCRAFT PHOTOGRAPHY

This order form is to be used for ordering all NASA AIRCRAFT PHOTOGRAPHY. Photo Identification numbers can be transcribed directly from a computer listing. When ordering from other reference sources, be sure to specify the MISSION, ROLL, and FRAME NUMBER for the desired photograph(s).

Several types of data are available over the same geographic areas. A personal visit to the Data Center or to one of the Applications Assistance Facilities is suggested if your order is sizable and will require technical evaluation and research.

Please provide the following information in the indicated areas of the order form:

- A. List your complete NAME, ADDRESS, ZIP CODE, and name of your COMPANY if applicable.
- B. List a PHONE NUMBER where you can be contacted during business hours.
- C. If you have had previous business with the Data Center, and this order relates to that business, please list the previous CONTACT NUMBER if known.
- D. Enter the complete PHOTO IDENTIFICATION NUMBER. This can be transcribed directly from the COMPUTER LISTING. If the source of information is from another source, specify the MISSION, ROLL NUMBER and FRAME NUMBER.
- E. Review the STANDARD PRODUCTS TABLE on the order form and determine the type of product desired. CARE must be exercised in insuring that the FILM SOURCE reflected in the tables correlates with the FILM SOURCE listed on the COMPUTER LISTING.
- F. Enter the PRODUCT CODE of the type product being ordered.
- G. Enter the FRAME NUMBER in the FIRST FRAME column. (See instructions for interpolation of a frame from a PHOTO STRIP) If two or more consecutive frames are being ordered, enter the FIRST FRAME of the series in the FIRST FRAME column and the LAST FRAME in the LAST FRAME column.
- H. Enter the NUMBER OF UNIQUE FRAMES being ordered. Example: FIRST FRAME - 116; LAST FRAME - 119; NO. OF FRAMES is 4.
- I. Enter the NO. OF COPIES being ordered of the FRAMES you have identified.
- J. The REMARKS column is completed only when a CUSTOM PRODUCT is desired and you want to specify the parameters.
- K. Multiply the NO. OF FRAMES by the NO. OF COPIES and enter the result in the QUANTITY column.
- L. Enter the UNIT PRICE of the product as reflected in the STANDARD PRODUCTS TABLE.
- M. Multiply the figure in the QUANTITY column by the figure in UNIT PRICE column and ENTER the result in the TOTAL PRICE column.
- N. REPEAT the above for each product ordered.
- O. TOTAL the costs of all products ordered on that order form and enter the NET result in BLOCK A. TOTAL ABOVE.
- P. If more than 1 order form is required, enter the SUM of the figures in BLOCKS A in BLOCK B on the last order form.
- Q. Enter the SUM of BLOCK A and BLOCK B in BLOCK C, TOTAL COST.
- R. Indicate the TYPE of payment being made with a CHECK MARK. Make all drafts payable to U.S. GEOLOGICAL SURVEY. DO NOT SEND CASH.

Mail ORDER FORM(s) and PAYMENT to:

USER SERVICES UNIT
EROS DATA CENTER
SIOUX FALLS, SD 57198

Exhibit 2.— EROS Data Center Form (Continued)

